SCIENTIFIC AMERICAN.

THE ADVOCATE OF INDUSTRY AND ENTERPRISE, AND JOURNAL OF MECHANICAL AND OTHER IMPROVEMENTS.

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THE
SCIENTIFIC AMERICAN,
PUBLISHED EVERY THURSDAY MORNING, AT NO. 11 SPRUCE STREET, NEW YORK, NO. 16 STATE STREET, BOSTON, AND NO. 21 ARCADE, PHILADELPHIA,
(THE PRINCIPAL OFFICE BEING IN NEW YORK,)

By RUFUS PORTER.

Each number will be furnished with from two to five original engravings, many of them elegant, and illustrative of *New Inventions, Scientific Principles*, and *Curious Works;* and will contain, in addition to the most interesting news of passing events, general notices of the progress of Mechanical and other *Scientific Improvements;* American and Foreign Improvements and Inventions; Catalogues of American Patents; Scientific Essays, illustrative of the principles of the sciences of Mechanics, Chemistry and Architecture; useful information and instruction in various Arts and Trades; Curious Philosophical Experiments; Miscellaneous Intelligence, Music and Poetry.

This paper is especially entitled to the patronage of Mechanics and Manufacturers, being the only paper in America devoted to the interests of those classes; but is particularly useful to farmers, as it will not only apprise them of improvements in agricultural implements, but instruct them in various mechanical trades, and guard them against impositions. As a family newspaper, it will convey more useful intelligence to children and young people, than five times its cost in school instruction. Another important argument in favour of this paper, is, that it will be worth two dollars at the end of the year when the volume is complete, and will probably command that price in cash, if we may judge from the circumstance that old volumes of the New York Mechanic, by the same editor, will now command double the original cost.

TERMS.—The "Scientific American" will be furnished to subscribers at $2,00 per annum,—one dollar in advance, and the balance in six months.

Five copies will be sent to one address six months, for four dollars in advance.

Any person procuring two or more subscriers, will be entitled to a commission of 25 cents each.

[From the Boston Courier.]

Ballad of the Alarmed Skipper.

"It was an ancient mariner."

Many a long year ago,
Nantucket skippers had a plan
Of finding out, through 'laying low,'
How near New York their schooners ran.

The custom was to grease the lead,
And then by sounding through the night,
Knowing the soil that stuck, so well,
They always guessed the reckoning right.

A skipper gray, whose eyes were dim,
Could tell, by tasting, just the spot,
And so below he'd 'dowse the glim'—
After, of course, his 'something hot.'

Snug in his berth, at eight o'clock,
This ancient skipper might be found;
No matter how his craft would rock—
He slept,—and skipper slept profound.

The watch on deck, would now and then
Run down and wake him with the lead,
He'd up, and taste, and tell the men
How many miles they went ahead.

One night 'twas Jotham Marden's watch;
A wag was Jo,—the pedlar's son,—
And so he mused, (the wanton wretch,)
'To-night I'll have a grain of fun.'

'We're all a set of stupid fools,
To think the skipper knows by *tasting*,
What ground he's on,—Nantucket schools
Don't teach such stuff, with all their basting.

And so he took the well-greased lead,
And rubbed it o'er a box of earth
That stood on deck, (a parsnip bed,)
And then he sought the skipper berth.

'Where are we now, sir? please to taste;'
The skipper yawned, put out his tongue,
Then opened his eyes in wondrous haste,
And then upon the floor he sprung.

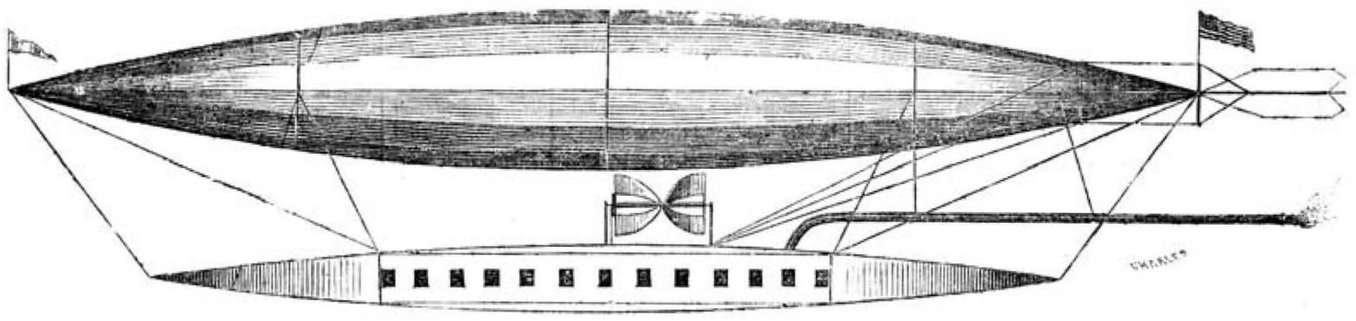
The skipper stormed and tore his hair,
Thrust on his boots and roared to Marden,
'*Nantucket's sunk, and here we are*
Right over old Marm Hackett's garden."

A Dandy.

A dandy is a chap that would
Be a young lady if he could,
But as he can't, does all he can
To show that he is not a man.

If wright you would write right,
You should not write it rite,
Nor write, nor right: but write it wright
And you will write it right.

THE TRAVELLING BALLOON.



ÆRIAL NAVIGATION.—The practicability of travelling rapidly and safely through the air, has been already established, as far as theory can establish a point without actual experiment; and the most important principles on which success in this mainly depends, have been already thus established. The specific gravity of hydrogen gas is less than that of atmospheric air, by something more than one ounce per cubic foot; and consequently a cubic foot of this gas being enclosed, has a buoyant power of one ounce in atmospheric air. A hollow globe, five feet in diameter, may be made of oiled silk of less than one pound weight; yet this globe, being filled with hydrogen gas, will possess a buoyancy in atmospheric air of more than four pounds. This sufficiently illustrates the first principles of ballooning; but as it is plain that a spherical balloon cannot be propelled with any considerable velocity on account of atmospheric resistance, we have adopted the eliptic spindle form, which will encounter—as will be proved in our next number,—less than 1-200th part as much resistance as a globe of equal diameter. A balloon of this figure, 350 feet in length and 35 in diameter, being inflated with hydrogen, will have acquired a buoyancy equal to 12,000 pounds. It will require in its construction 16 long rods, extending the entire length, and estimated to weigh 1000 pounds. 2,200 yards of strong linen cloth which, when varnished, will weigh 1000 pounds, thus leaving a balance of buoyancy of 10,000 pounds. An eliptic or revoloidal spindle-shaped saloon is attached to the balloon, being suspended immediately under it by cords or wires. It is covered with cloth, excepting about 100 feet of the central part, which has a permanent floor and is ceiled with thin boards. The weight of this part of the apparatus is estimated at 3,000 lbs. We have already constructed and put in operation a steam engine and boiler capable of working two horse-powers, but weighing only 200 lbs., from which it is estimated that an engine and boiler, of a size to work two horse-powers, may be made within the weight of 1000 lbs. One or two spiral fan-wheels, of 16 feet diameter, together with the requisite machinery for communicating the power of the engine to the fan-wheel; and the requisite ropes and rigging connecting the saloon to the balloon, &c., may all be comprised within the weight of 1000 lbs.: thus leaving a balance of buoyancy of 5,000 lbs. for passengers, baggage, &c. A rudder consisting of two broad fans, intersecting eaeh other at right angles in the centre, is attached to the stern end of the balloon, by a ball and socket, or universal joint. Four arms project in opposite directions from the rudder near its connecting joint; and from the ends of these, small lines extend to the interior of the saloon, and by means of which the direction of the balloon is completely governed, both horizontally and vertically. With regard to the velocity of this ærial ship, it is susceptible of demonstration, and will be shown in a future number, that ten horse-powers is sufficient to balance the atmospheric resistance at a velocity of 100 miles per hour: but if it were otherwise, there is sufficient buoyancy to admit of engines capable of producing 30 horse powers. This balloon being once inflated, is intended to be kept constantly afloat, being *moored* at about 100 feet distant from the earth, when not in use. When passengers are to be received or landed, the balloon will descend to within a few feet of the ground, and a light-seated car will descend with passengers, to receive them. When passengers are received, a corresponding weight of stone blocks will be deposited, and *vice versa*. The saloon will be furnished with an apparatus for the production of hydrogen, sufficient to supply whatever quantity may escape by leakage. The interior of the balloon will contain an arrangement of lines and pulleys, by which the circumference may be contracted sufficient to cause the balloon to descend whenever occasion requires. These lines, which are attached to the rods, and by which the rods are drawn towards the centre, are operated by a small iron rod or wire, which passes from the interior, down through a small stuffing box, to the saloon. By means of this rod and system, the vertical movement of the balloon will be principally governed. With regard to the safety of this mode of travelling, we think it can be readily made to appear that there will be less danger in travelling over *land* in ærial vessels, than there now ordinarily exists in travelling by either sailing vessels or steamboats. In the first place, the balloon will be less liable to accident, than either steam vessels or railroad cars, on account of being less exposed; resting on the elastic atmosphere, and floating with the current, except what forward motion is given it by the propelling machinery, it cannot be effected by gales or squalls, like a stationary object, and its motions must be comparatively gentle. In the second place, the balloon will never soar so high but that in case of accident, or any derangement of the machinery, it may safely descend to the earth, in ten minutes: an idea much more consolatory to the passengers, than that of being five hundred miles from land, and surrounded by a violently raging element, to which, in case of either fire or leakage, the marine passenger must commit himself. A third consideration is, that the balloon will be furnished with an improved parachute for each passenger, and of which each may avail himself in less than one minute, in case of any extraordinary emergency, and thus descend safely to terra firma, much easier than he could paddle himself to shore, on a cotton bale, even from the middle of Long Island Sound. The steam engine by which the balloon is propelled, will be very small, and the boiler being constructed of small copper tubes, there can be no possibility of damage by explosion: and no accident can possibly happen to the balloon, that would cause a sudden descent, so as to prevent the passengers from having sufficient time to avail themselves of the parachutes. Moreover, their baggage would all come to land in due time. We shall give further and more minute particulars on this subject, with sectional illustrations, and mathematical demonstrations; but these must be deferred for future numbers.

MECHANICAL TASTE.—We are often surprised that mechanics do not pay more attention to the art of design—Indeed, knowledge of every kind is valuable to them. Sir Richard Arkwright was, we believe, a barber, but having turned his attention to machinery, and getting hold of a hint invented the spinning jenny and amassed a fortune. Wedgwood's pottery came first into notice in consequence of the elegant shapes and designs of his vases, cups, &c. A poor German mechanic rose to wealth in New York city, by being the first to introduce iron railings of beautiful patterns in place of the plain, old-fashioned straight rail pointed at the top. There is a yankee now making his fortune by a cheap process of map colouring which a little chemical knowledge suggested to him. We know a man who has improved the ordinary machine for plating whip-lashes, and applied it to the making stay laces, so that he can manufacture these articles for a price indefinitely below any rival. So, too, in common house-building, the carpenter, in a newly settled district, who understands how to erect a graceful dwelling, will soon carry off the business of those who are contented with the old clumsy style. Who would not prefer a window screen prettily painted to an old fashioned Chinese blind? Yet the one is not dearer than the other. In a word, taste and knowledge, when brought to bear on the mechanic arts, will always carry off the palm from stupidity and ignorance.—*Neal's Saturday Gazette.*

BOTHERING A WITNESS.—A Little Rock paper tells a story of a youth put upon the witness's stand, who was bothered by the counsel on the opposite sides—one complaining that he could not understand the witness, and the other claiming the protection of the court against such interruptions. Losing all patience, at last, the witness addressed himself to the court—"If you'll just stop 'em both, I'll tell my story so that the biggest fool in the house will understand it all."

A BEAUTIFUL FIGURE.—Life is beautifully compared to a fountain fed by a thousand streams that perish if one be dried. It is a silver cord twisted with a thousand strings that part asunder if one be broken. Frail and thoughtless mortals are surrounded by innumerable dangers, which make it much more strange that they escape so long, than that they almost all perish suddenly at last. We are encompassed with accidents every day to crush the mouldering tenements that we inhabit. The seeds of disease are planted in our constitutions by nature. The earth and the atmosphere whence we draw the breath of our life are impregnated with death—health is made to operate its own destruction! The food that nourishes the body contains the elements of its decay; the soul that animates it by a vivifying fire tends to wear it out by its own action; death lurks in ambush along our paths. Notwithstanding this is the truth, so palpably confirmed by the daily examples before our eyes, how little do we lay it to heart! We see our friends and neighbours perish among us, but how seldom does it occur in our thoughts that our knell shall, perhaps, give the next fruitless warning to the world!

A MAN OF MUCH EXPERIENCE.—A Glasgow paper tells of one Robert Arkless, aged 73, who has been wedded to five wives, and has been the father, up to this time, of 33 children, He has been one of the Church's best customers. Of his children, 29 have died, and of his wives four. This gives 33 funerals. As all his wives are churched for each birth, he has paid for 33 churchings. As all his children up to this time, have been christened, this gives 33 christenings. Having been five times married, he has paid for five weddings? This is a pretty account. A century ago he would have been taken to Court and rewarded as a praiseworthy subject. He is now working for one shilling a day, and his wife for 8d, his master allowing him house and garden.

COMMERCE OF THE UNITED STATES.—The following statement of the commerce of the United States, for the year ending June 30th, 1845, is from the Washington correspondent of the New York Courier. It will be seen from it that the balance of trade is against us to a small amount.

The total value of imports for the year, ending June 20, 1845, is	$119,512,606
The total value of exports for the year, ending June 30, 1845, is	107,891,622
Excess of imports,	$11,620,984
The total exports of specie for the year, ending June 30, 1845, is	$8,477,651
The total imports of specie for the year, ending June 30, 1845, is	3,952,233
Excess of exports of specie,	$4, 525,418

PAPERING CHURCHES.—This is a new fashion, which has grown up lately in Pittsburg, and one that adds much to the interior neatness and beauty of churches. The Fifth Presbyterian church in Pittsburg has been papered with plain granite walls, and a handsome figure paper on the ceiling. The Disciples' Church, in Allegheny, is papered with granite paper on the walls, with marble columns.—The South Carolina Methodist Church, in Allegheny, is covered with marble paper on the walls, with marble columns supporting cornice. The ceiling is covered with white watered paper. The Gazette says paper combines neatness and cheapness, and can be renewed at small expense—not nore than double that of whitewashing.

GOOD ADVICE.—Somebody says: The best cure for hard times is to cheat the doctor by being temperate: the lawyer by keeping out of debt: the demagogue by voting for honest men; and poverty by being industrious: but pay the printer if you wish to be happy, and don't want to have the nightmare.

CATALOGUE OF AMERICAN PATENTS
ISSUED IN 1844.

CLASS V—*Calorific, comprising lamps, fireplaces, grates, furnaces for heating buildings, cooking apparatus, preparation of fuel, &c.*

[Continued.]

Improvement in the draught of chimneys—Archibald Wieting, Middletown, Pa., Dec. 16th.

Method of breaking coal—Joseph Batten, Philadelphia, Pa., Feb. 12th.

Fire-fenders—M. Morgan, Jr., New York, July 22nd.

Fire-places—Daniel Hemingway, Leesburg, Ky., Nov. 9th.

Hot-air furnaces—Jeptha Bradley, St. Albans, Vt. June 24th.

Improvement in grate-bars of furnaces—John Kymer, Caermarthen, South Wales, Eng., July 19th.

Furnaces for heating buildings—George Walker, New Haven, Ct., June 10th.

Portable furnaces—George E. Waring, Stamford, Ct., March 16th.

Lamp—Henry B. Fernald, Boston, Mass., May 17th.

Alcohol lamp for medicated vapour baths—Giles L. F. Griswold, assignee of L. E. Hicks, Middletown, Ct., March 16th.

Lamp-caps—Francis Draper, Esq., Cambridge, Mass., Nov. 20th.

Lamp-caps—D. Jarvis and New England Glass Co., assignees of R. M. Eddy, Boston, Mass., May 10th.

Improvement in the construction of lamps—Christopher West, Baltimore, Md., Oct. 7th.

Lard-lamp—John Tobin, Bloomfield, N.J., March 26th.

Light-house lamp—Winslow Lewis, Boston, and Benjamin Hemmenway, Roxbury, Mass., Aug. 7th.

Self-supplying lamp—Edwin B. Horn, Boston, Mass., Sept. 11th.

Lamp for burning volatile ingredients—Isaiah Jennings, New York, Oct. 12th.

Mode of raising lamp-wicks—Samuel Rust, New York, March 9th.

Improvement in oil feeders—Joseph Benson, Boston, Mass., Feb. 28th.

Cooking-ranges—Herbert H. Stimpson, Boston, Mass., May 17th.

Kitchen-ranges—A. W. Thompson, Philadelphia, April 10th.

Metalic reflectors—Alonzo Farrar, Boston, Mass., April 4th.

Air-heating and cooking stoves—John Wolley, Springfield, Msss., March 16th.

Air-tight stoves—John Cline, Norwalk, Ohio, Jan. 6th.

Self-regulating air-tight stoves—Harned & Elliott, assignees of Saxton and Elliott, Philadelphia, Oct. 30th.

Apparatus for regulating the heat of stoves—Samuel D. Tillman, Seneca Falls, N. Y., April 17th.

Improvement in cooking-stoves—James Young and Elmon Parker, Philadelphia, Feb. 12th.

Improvement in cooking-stoves—Jordon L. Mott, New York, Feb. 12th—Simon Pettes, Schenectady, N. Y., Feb. 12th—S. S. Jones, Philadelphia, Feb. 20th—Ashley Hotchkin, Maryland, N. J., Feb. 20th—Samuel Bentz, Boonsboro', Md., March 9th—Roswell Bush, Rochester, N. Y., April 4th—Abner Leland, Milton, Pa., April 4th—Frederic Kesselmeir, Wooster, Ohio, April 13th—Peter Mills, Binghampton, New York, April 30th—Isaac Straub, Cincinnati, Ohio, June 5th—W. & R. P. Resor, assignees of Thomas Bent, Cincinnati, O., June 5th—James White, Milton, Pa., June 10th—Calvin Fulton, Rochester, N. Y., June 10th—John C. Hermance, Schenectady N. Y., June 13th—Henry W. Camp, Oswego, N. Y., June 24th—James Wager, Troy, N. Y., July 9th—Lewis James, Amsterdam, N. Y., Sept. 2d—John W. Riggs, Fort Plain, N. Y., Oct. 30th—James H. Lyon, Schenectady, N. Y., Nov. 18th—Adam Ketler, Philadelphia, Pa., Dec. 7th—Archibald Wieting, Middletown, Pa., Dec. 16th—William L. Potter, Clifton Park, N.Y., Dec. 19th.

Cooking and heating stoves—Laommi Baily, Boston, Mass., March 26th.

Railway cooking stoves—Chollar, Jones & Low, assignees of Chollar and Parmelee, West Troy, N. Y., July 11th.

Heating apparatus—John Smart, Philadelphia, Pa., March 25th.

Apparatus for warming buildings—Benjamin Blaney, Boston, Mass., Sept. 7th.

CLASS VI—*Steam and Gas Engines, including Boilers and Furnaces therefor, and parts thereof.*

Steam-boiler or generating apparatus—Gabriel H. Moreau, France, Jan. 26.

Heater of steam-boiler, &c.—Zenas C. Robbins, St. Louis, Mo., Oct. 16.

Regulating the supply of water to steam-boiler—Daniel Barnum, Bridgeport, Conn., July 24.

Furnace of steam-boilers—Leman Bradley, Sharon, Conn., Dec. 12th.

Gas-light apparatus—James Crutchett, Great Britain, (now in Cincinnati, Ohio)—Eng. July 12th, 1842; U. S. A. May 6th, 1844.

Inflammable Gas or vapor engine—Stuart Perry, Newport, N. Y., May 23d.

Mode of construeting and governing steam engine, for the purpose of supplying a steam boiler, auxliary—Henry R. Worthington, New York, July 24th—reissued Sept. 7th.

Condenser and boilers of steam engine—Benjamin Crawford, Allegheny city, Pa., Sept. 7th.

Conical balance valves, steam engine—Thomas McDonough, Middletown, Ct., Feb. 12th.

Conical seat and steam valves, steam engine—Sprague Barber, New York, April 20th.

Locomotive steam engine—Edwin F. Johnson, New York, Dec. 31st.

Opening and closing the valves of steam engine—Frederick E. Sickles, New York, Oct. 19th.

[To be continued.]

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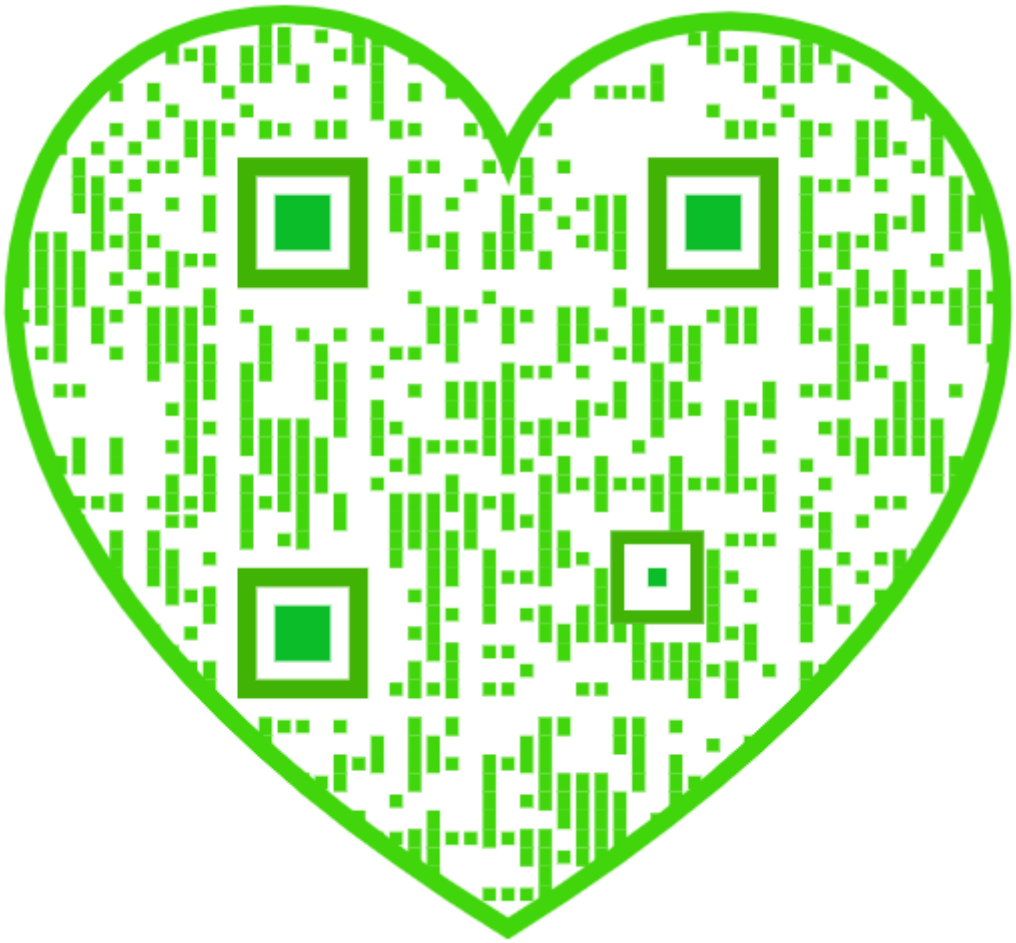
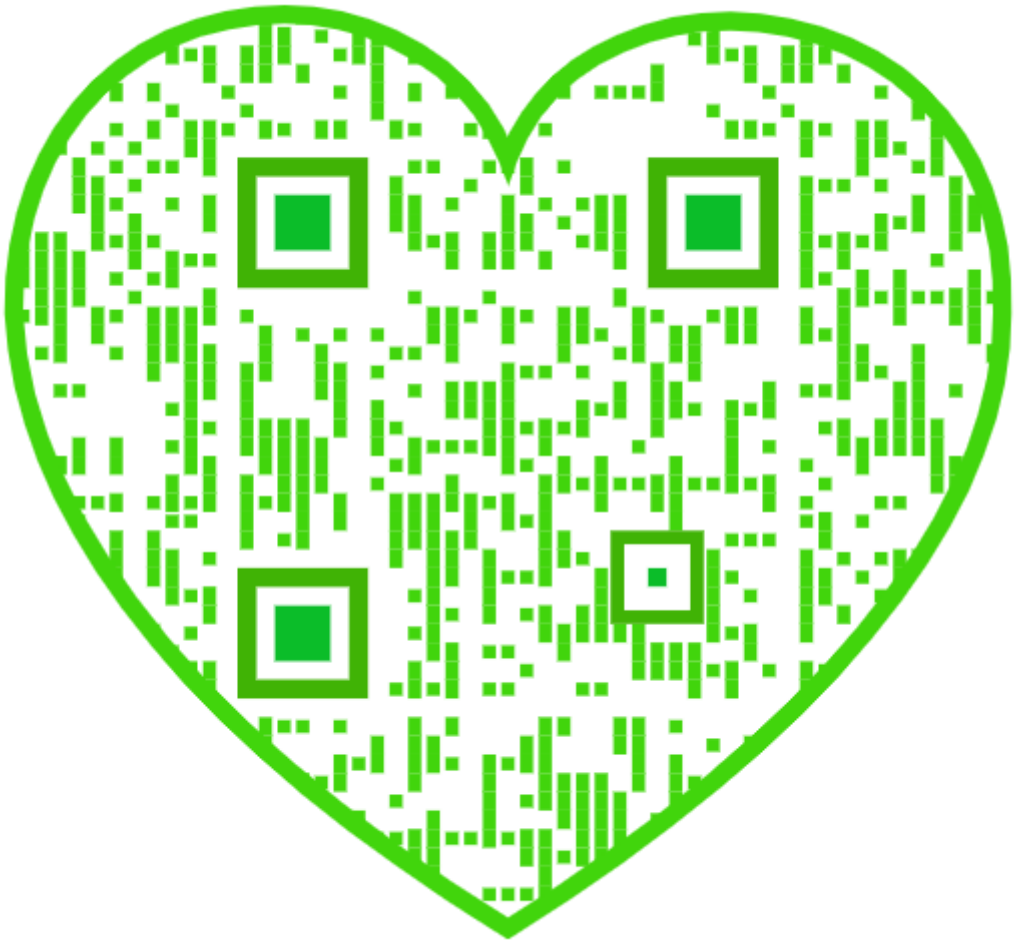




SCIENTIFIC AMERICAN

NEW-YORK, THURSDAY, SEPT. 18.

THE ONE DOLLAR REMITTANCE.—We thank our kind patrons for their promptness: but would remind those few who have received the second number of this paper, but have not yet sent the first dollar according to stipulation, that promptness in this case, is essentially important to us. We trust they will save us the trouble of calling on any one by name.

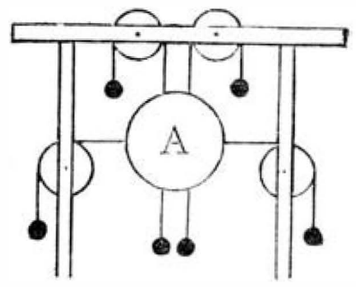
REPUBLISHING.—It appears to be the wish of many of our subscribers, who have not had the perusal of the "New York Mechanic," that we should insert in this, some of the most interesting articles from that paper. We trust our former patrons, who have seen those articles before, will not regret their insertion.

SECURE THE FIRST NUMBERS.—We have a few copies of our first number remaining, and those who intend to become subscribers will do well to secure them while they may. There will soon be a pressing demand for them, when too late. We are authorized to offer fifty cents for the first number of the New York Mechanic.

DISAPPOINTMENTS REPEATED.—We may hereafter relate something truly diverting on the subject of the music which we had prepared, and the plate of which we had the promise some three weeks ago. We hardly expected such things in New-York; but have decided to send to Philadelphia for music type, since none can be procured in this city. Our friends shall not often be disappointed on this subject.

POSTMASTERS and others to whom this paper may be sent, are respectfully solicited to exhibit the same to others, that its patronage may be thus extended.

First Principles of Mechanics.



EQUILIBRIUM.—When two or more forces operate on a body in opposite directions so as to counteract or balance each other, they produce what is called equilibrium. If two horses of equal power are harnessed to a reed, or a small slender tree, and draw in opposite directions, the tree will not be bent by the draught. If four horses draw at the same object in the direction of the east, west, north, south, no effect will be thereby produced. The exertion of forces in opposite vertical direction, are equally ineffectual. In the diagram which heads this article, the hoop A. is supposed to be void of weight, or as light as air; but has the forces of the weight of several equal balls drawing in different directions. The consequence is, that the hoop remains unmoved. But let either of the cords which sustain the balls be severed, and the hoop would leave its present position instantly. In this illustration, the only force applied to the hoop is that of gravity, If the hoop was made of iron, and was equal in weight to two of the balls, and the two lower balls were detached, the hoop would still remain unmoved; being then as now represented, in a state of perfect equilibrium. Thus a stone or any other ponderous body, while lying at rest on the surface of the earth, is subject to the action or exertion of the force of gravity in a variety of directions, yet if has no tendency to move in any direction except downward. When a block of wood is gently put into still water, it will descend by the force of gravity, until it has displaced a quantity of water, equal to its own weight. If an inch cube, of any substance whose specific gravity is equal to that of water, be put into a vessel of water containing two square inches of surface, the cube will descend half an inch, and in so doing, it will elevate the surface of the water half an inch, thus bringing the surface of the water to a level with the top of the cube. In this instance it may be readily understood, that by the descent of the cube in the water, an equal quantity and weight of water is elevated a distance equal to that which the cube descends, thus seeking and producing an equality of force. In this instance the water exerts a force termed buoyancy on the cube and directly opposite to that of gravity. In all instances of the action of buoyancy, in which any ponderous body is supported by water, the whole surface of the water, however extensive that surface may be, is elevated: the extent and elevation of this always bears the same proportion to the descent of the floating body, that the area of the floating body does to the whole surface of the water. An interesting instance of equilibrium, may sometimes be seen in a square rigged sailing vessel, directly before the wind, but stemming a strong current. Cases of this kind, may be often seen on the Connecticut River, in which, vessels nearly remain stationary for hours, having a strong current in one direction, and fresh breeze in the opposite, while gravity direct—the weight of the vessel and cargo—tends to sink or depress it, and the force of buoyancy of the water supports or holds it up; thus the vessel is held in perfect equilibrium. We have not supposed it necessary to give any explanation of the nature of the pulleys, over which the cords pass from the hoop to the balls, as represented above; but as the lever, of which the pulley is a modification, constitutes an important item in the science of mechanics, we shal, make that the subject of the Scientific Mechaniel in our next number.

The Art of Painting.

(Continued from No. 3.)

Most of these colours can be procured ready ground in oil at the principal paint stores: but it is in general, more convenient for the amateur, to procure the colours in a dry state and grind them himself, especially if small quantities only are required. The ordinary mode of grinding paints is to put a small quantity on a smooth stone, and add a small quantity of linseed oil sufficient to moisten it, and grind by passing another stone, (termed a muller,) over it till it is sufficiently fine for use. In this case a sufficient quantity of oil should be mixed with the paint to render it soft and of convenient consistence to spread readily over the stone, but not so thin as to run off. During this process of grinding, the operator should press on the muller with considerable force, moving the muller in circular or other directions at discretion, as will most effectually reduce the paint to the requisite fineness. When each qantity is sufficiently fine for use, it is removed from the paint stone to the cup or vessel prepared to receive it, by means or a broad but thin and elastic blade, termed a paint-knife. This paint stone, however, with the stone muller, and paint-knife may be dispensed with; and a piece of planed plank, with a block of wood for a muller and a thin blade of wood for a paint-knife, may be conveniently substituted: indeed many of the colours mefore mentioned, may be simply mixed to the proper consistence with oil, and will answer for common outside painting without grinding. Of this class are Venitian red, yellow ochre (commonly known as "French yellow), French green, chrome green, Vermillion and lamp black. Paint mills are in general use with those who make a business of painting. When white lead,—which is a principle article in house-painting,—is to be ground in a mill, it is first pulverised by passing a hand roller over it to crush the lumps: it is then mixed with oil in considerable quantity previous to grinding. In this process the operator usually judges of the consistence of the mixture without regard to weight or measure of the ingredients, merely mixing it as stiff as can be conveniently stirred with a stick or spatula; but the usual proportion is three and a half gallons of oil to a hundred peunds of white lead. All other paints are also mixed prior to grinding. For outside painting on bare wood in warm weather, no other ingredient is required than pure linseed oil, with which to mix and dilute the paint. The only rule to be observed in tempering the paint, is to dilute with oil till it will spread freely with the brush. If a new paint brush is to be used it should be of a short smooth kind called *ground brushes*; but no new brush is suitable for common painting, till it has been used two or three days on roofs, brick walls, or other coarse work. It is better for a beginner to procure a half-worn brush if possible: otherwise he may bind the brush with twine for a third part of its length, thus confining the bristles in a compact form till the brush is worn smooth and soft. The brush should in general, be held firmly between the thumb and first finger of the right hand, but passing between the first and second fingers: but in various kinds and positions of work, it is held in a different manner, either in the right or left hand. A painter should be accustomed to work with either hand, with equal dexterity. When the brush is dipped in the paint, it should be drawn lightly across the edge of the *paint-pot* or *bucket*, to remove the redundant paint and prevent its dripping from the brush when filled; or may be gently spatted against the inside of the pot, which will answer the same purpose. In painting on wood, the paint should be brushed crosswise and otherwise till it is evenly spread over the work, and then smoothed by being brushed carefully with the grain of the wood. This rule must be particularly observed in painting pannel doors; the pannels are first smoothed; then the beads round the pannels; next the shorter parts of the frame, and last the vertical sides and ridges.

[To be continued.]

New Inventions.

IMPROVED MODE OF TEACHING MUSIC.---A Mr. Jamison, of England, has introduced music printed in different colours, which represent the several tones in the octave, without the use of the five lines staff. The keys of the piano are also coloured to correspond with the book, so that the learner can play offhand with very little practice. The form of the characters is simple but of diverse lengths, thus indicating the length of the notes to be played. We should think this an excellent plan for facilitating the teaching and learning of music, besides contributing much to the convenience of musicians in general.

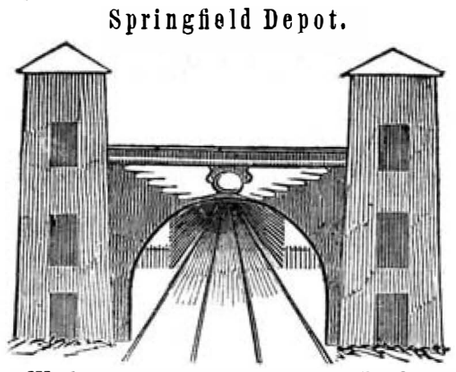
BENTLEYS AND RANDALL'S GENERATORS.—Mr. Godsby, of the National Hotel, speaks in high terms of this, as a labour and fuel-saving invention. He says he boils five times as much water in one half the time that was required by the ordinary method; and that as he burns only refuse, and otherwise worthless coal, the fuel costs him nothing at all. We have not yet seen the improvement, and of course cannot describe it.

A WAR IMPLEMENT.---Another destructive agent has been invented in Cincinnati. It is a new kind of cannon ball, by which it is asserted one vessel could sink a British fleet of ten sail in as many minutes. As a general rule, however, we think there is little credence to be given to statements concerning new inventions, unless some description is given.

IMPROVED SASH FASTENER.—Mr. Daniel N. Smith of Boston has invented a sash fastener on a new and improved plan, and which is highly spoken of in a Boston paper, although no specification is given. It is said to be more compact and neat in appearance than others, and at the same time more safe. It will when requisite secure the window against being opened without a key even by a person inside.

Another Cotton factory and Carpet factory are about to be constructed at Georgetown, D. C.

Springfield Depot.



We have seen no gate-way on any railroad constructed with so much elegance and good taste as that of the depot at Springfield, Mass. This depot is situated near the bridge, the entrance of which is seen through the archway as shown in the engraving. This building when first seen in the distance, as the passenger approaches from the east, appears like two ordinary gate posts about six feet high, with a gate between; but the traveller is surprised to see these gate-posts increasing in size as he approaches, till, after gliding over two miles of distance, he finds his gate posts to be a pair of towers nearly fifty feet high, and twenty feet square at the base, and occupied as sitting rooms, and business offces of the depot. Over the archway is a commodious dining hall and other apartments for the accommodation of passengers. The bridge over the Connecticut, which is 600 feet wide at this place, is not excelled by any bridge extaut. The western railroad is intersected at this place by the Hartford and Northampton railroads; and when the four trains from the four points meet here with their passengers, a bustling congregation is witnessed, and the instantaneous assemblage from the east, west, north, and south, of people who commingle and associate for a few moments and then as suddenly separate, presents a scene of peculiar interest, and produces a sensation of loneliness in those who remain when the trains have departed.

Re-action of Fluids.

Much has been said and written on the subject of the re-action of steam, water, and other fluids, which has induced us to examine and investigate the principles thereof, which has resulted in the entire conviction that the re-action of fluids, which is by many regarded as a frivolous concern, is in fact an important consideration in mechanics; or at least is one which developes important principles, which have hitherto been overlooked, and are still but very imperfectly understood. In a recent article on the subject the writer contends that the re-acting power is uniformly the same, whatever may be the velocity of the wheel from whence the re-acting fluid issues. But if he considers that there is as much power required to overcome the inertia of the fluid in giving it a motion rotarily with the arms of a wheel, as the momentum of said fluid will exert by re-action on the arms, he will perceive that if the arms move with a velocity as great as that by which the fluid issues from the aperture, the fluid will have entirely ceased to operate by re-action on the arms; and as it issues from the aperture, will remain nearly motionless. It appears to us that the readiest method of coming at a demonstration of the principle of the re-action of a fluid, is to inquire, first, Why does not the fluid escape from the reservoir more rapidly than it does, when under a pressure, and the aperture is open? To this question there can be but one answer, which is, that a considerable force is required to overcome the inertia of the fluid and put it in motion: and as the *square* of the force is required to produce *double* velocity, it follows that as much power is required to give one ounce of steam the velocity of 2000 feet per second, (which is about equal to that of steam issuing from an aperature under a pressure of 100 *lbs.* per square inch,) as would give 65,500 *lbs.* a motion of one foot per second. And this is the power that is actually applied by way of re-action, to the arms of a re-acting steam engine, while they are held stationary: but when the arms or wheel is put in motion, the force of re-action is reduced as the square of the velocity. Thus if the motion of the wheel is 1000 feet per second, (which is half of the supposed velocity of the steam,) then the motion of the steam in the contrary direction is reduced to 1000 feet per second, and its force of re-action is consequently reduced to 25 *lbs.* per square inch, or one fourth part of what it is when the wheel is at rest. The same rule will apply to the action of water on a re-action water wheel. If the water is admitted to the wheel under a pressure of 16 feet head, the force of the re-action on the wheel would be about 7 *lbs.*, per square inch of aperture, while the wheel is at rest: and the velocity of the escaping water would be 32 feet per second. But if the wheel has a motion of 16 feet per second, the re-acting force of the water is reduced to 1 3-4 *lbs.*, per square inch, although the quantity of water used continues the same. If the head of water is but four feet, its velocity will be 16 feet per second, but its re-action less than 1-2 *lb.* per square inch. And as in this case, the reduction of the motion of the wheel is equal to that of the quantity of water used, it is evident that a much greater quantity of power may be derived from a fluid by re-action, under a high pressure, than under a low; even in proportion to the quantity and fall of water, or of fuel required for the production of steam, as the case may be. With a consideration of the foregoing facts before us, however, in whatever light we view the subject, we invariably arrive at the conclusion, that not more than one fourth part of the *full power* either of water or of steam, can be derived therefrom by the principle of REACTION.

HORRIBLE EXPLOSION IN ENGLAND.—An explosion of the *firdamp*, lately occurred in one of the Durham colleries, by which *forty-nine* persons were killed. This wanton destruction of human life is, in our view, but little short of wholesale murder. The trifling expense of fifty to one hundred dollars would have been sufficient to have ventilated the mine, and prevented the danger. But labourers are plenty, and the proprietors appear to have but little regard for their lives.

Illustrations of Chemistry.

(Continued from No. 3.)

There are comparatively small portions of mankind, who are aware of the composition of the most common articles in use; and some articles are by those who have given attention to chemistry, supposed to be simple bodies, which are in fact composed of three or more different ingredients. Water, for instance, is composed of oxygen, hydrogen and caloric. Common table salt is composed of chlorine, soda (both corrosive substances) and hydrogen. A common brick is composed of allumine, silex, lime, oxygen and iron; this last ingredient in combination with oxygen, constitutes the red colour of the brick. In the composition of sea-salt all the ingredients are chemically combined; but in that of brick, with the exception of the iron and oxygen, they are merely mixed. The common saleratus is composed of potassium, oxygen and carbon: the potassium being first combined with oxygen, which gives it the form of potash, and becomes afterward united with a combination of carbon and oxygen in the form of carbonic acid. All chemical combinations depend on *chemical affinity*, and this affinity is much greater between some bodies than others, insomuch that two combined articles may sometimes be readily separated by the presence of a third, whose affinity for one of the first ingredients is greater than that between the two first.

EXPERIMENTS.—Drop a few lumps of saleratus into a glass of acetous acid or vinegar: the oxyde of potassium will unite with the vinegar, while the carbonic acid will be violently driven off in the form of gas.

To a solution of silver in nitric acid, add a solution of common sea salt, (which is called muriate of soda) in water: the nitric acid will let go the silver and unite with the soda, while the muratic acid of the salt will combine with the silver, forming a white opaque precipitate, which is a muriate of silver.

Mix together one ounce of pure caustic soda, and half an ounce of muriatic acid, (both corrosive substances:) the result will be common table salt.

Into a transparent solution of lime in muriatic acid, pour a transparent solution of saleratus in water: the muriatic acid will combine with the potash, while the carbonic acid will combine with the lime, forming a dense opaque precipitate, which is a carbonate of lime.

In a transparent solution of acetate of lead, (sugar of lead,) suspend a small piece of zinc: the acetic acid will combine with the zinc, and the lead of the solution will be precipitated thereon in metallic form, and branching out curiously in all directions will form a metallic tree. (To be continued.)

DRUNKARDS BEWARE.—When topers are found drunk in the streets, it is the custom of our humane police, to deposit them in the Tombs, (city prison) for safe keeping, but with little regard to the safety of their lives; and it is not unfrequently the case that the prisoner, when next visited, is found dead. Two instances of this kind have occurred within a few days: and every toper knows, that if after continuing on a *spree* for several days, if he is suddenly and totally deprived of the use of stimulents, debility, delirium tremens, convulsions and death generally ensue. It is therefore advisable that no person should appear in the streets of the city, while drunk, unless he is prepared to die.

GOING AHEAD OF TIME.—It is reasonably expected that when the extensive western lines of the Magnetic Telegraph are put in operation, intelligence will be communicated westward more rapidly than the *apparent* motion of the sun; so, that if a communication is made from New York at sunrise, it will have arrived at St. Louis, Mo., half an hour at least before sunrise. Hence the Missourians are anticipating the pleasure of reading the speeches in Congress, *before they are delivered!*

AMERICAN RAILROAD JOURNAL.—This valuable and highly interesting work is published weekly, on large and heavy sheets, in octavo form, at 23 Chambers street, by D. K. Miner. The terms of this paper are $3 per annum. and decidedly cheap at that. No person in any way concerned in, or connected with railroads, should be content without it. As a "general advertiser of railroads, canals, steamboats, machinery, and mines," it is preferrable to any other medium, and as such, should be extensively patronized by all concerned in those branches.

CIVILIZATION AMONG THE INDIANS.—An agricultural meeting was held by the Cherokees on the 16th ult. for the purpose of forming a National Agricultural Society. A variety of valuable premiums were offered for the best specimens of produce and manufactures, among which we observe "a cup worth five dollars for the best beaded belt." Another premium is offered for the best socks. These premiums cannot fail to excite much emulation among the industrious squaws.

LIBERTY.—It is common to hear people oppose the temperance movements, on the plea that they restrict or curtail the *liberty* for which our fathers fought. On this subject the "razor-strop man" describes the liberty which he enjoyed while intemperate, and which may be a fair specimen of the liberty contended for. He says: "My toes had liberty to poke out of my boots: my elbows had liberty to come out of my coat: and I had liberty to lift the crown of my hat and scratch my head without taking my hat off." Who would not contend for liberty?"

LIBERAL NOTICE.—Of the thirty or more flattering notices of this paper, by our generous contemporaries, we present the following from a paper which needs no similar favours,—the Greensborough, (N. C.) Patriot:—

"*Scientific American*,"—We copy the prospectus of this paper, and take pleasure in saying to our readers that Mr. Porter the editor, is every way competent to the task he has undertaken. We exchanged with him when he published the New-York Mechanic, then one of the raciest and most interesting papers on our exchange list. The mechanics of our vicinity may see the first No. of the Scientific American at our office.

VARIETY

A variety of inscriptions, and other curious antiquities, from ancient NINEVEH, have recently arrived in France, for the Government. They will tend to confirm the authenticity of the scriptures on the subject of that ancient city.

The Falls of St. Anthony, in the Mississippi river, is called by the Indians *Mene-ha-ha*, which signifies "the water that laughs." This is one instance of similarity between the Indian and the English languages.

"What's the news?" is a common question; "Nothing special;" an equally common reply; but this is in bad taste. It is better to have something to report, even if you have to invent a trifle, than oft repeat this thread bars answer.

The fare on the Baltimore and Washington rail road is redneed to $1 60. The proprietors will have advanced their own interest, and avoid many complaints by this reduction.

Morse's Telegraph is to be laid along the Pennsylvania Canals and Railroads, the use of which has been granted on condition that government orders of public interest will be communicated free ef charge.

Judge Sargent, of Philadelphia, has decided that if a man and woman acknowledge themselves to be husband and wife, in the presence of witnesses, they are bound by the laws of matrimony.

The new stereotype process recently invented by Mr. Warren, of Indiana, appears to be a valuable invention, though far short of the extravagant representations of some of the western papers.

Somebody has said, ('somebody' says a great many pert things,) how *civil-eyes*-ed a man looks when you are paying him 'that little bill.' We always think so.

A city paper, in speaking the praises of Miss Delcy, says "hers is the only *hylish* female voice we have ever heard." That word is similar to one we have heard before.

The Roman Catholic Association for the propagation of their faith, report the appropriation of $154,200 to their mission in the United States during the last year.

The number of rumshops in Portland, Maine, has been reduced to forty; and the owners of them have been honoured with the appellation of "the forty thieves."

A large spider was lately seen to catch a fish nearly an inch and a half long, from the water, near the city, and convey it safely to the shore. He probably makes a business of it.

Cotton thread has been spun so fine, in India, that one pound of it would reach 115 miles, When woven into cloth, it becomes transparent, by being moistened with water.

To manufacture a single yard of broadeloth by hand, and without the use of machinery of any kind, would require the labour of two men for more than a year.

James Hayward, Esq., having surveyed the route for a railroad between Portland, Me., and Brunswick, reports that he found the route very favourable and easy of construction.

It is reported that a line of magnetic telegraph, between Boston and Lowell, will be constructed in a few days. It is but the commencement of a longer line.

The population of the city of Buffalo is 28,350, having increased 10,000 within the last five years. The increase of business is in proportion, much greater.

A punnical writer says that 9,000 *pigs* have recently arrived at St. Louis, having been *lead* all the way from Galena. The lead trade is brisk.

There are on hand at the Branch Mint, New Orleans, about $60,000 in gold, and $4,700 in silver coins, of which $ 3,000 are in dimes and half dimes.

The estimated cost of projected railroads, and other works of enterprise in England, amounts to the enormous sum of 482,335,465 dollars.

Rufus King, Esq., editor of the Albany Daily Advertiser, is about to remove to Milwaukie, and take the editorial charge of the Milwaukie Sentinel.

Of two hundred and three prisoners in the Auburn State Prison, all but one have confessed that they had been addicted to drunkenness.

The receipts at the Patent Office last month, were about $5,000. The inventive genius of America is wide awake.

The quantity of lead shipped at Galena the present season is expected to reach six millions of pounds. The quantity shipped last year was 43,000,000 lbs.

There are four peers in England whose nett income is nearly $500,000 per annum each. It must be a hard job to manage so much property.

The great lake of Grenada, in Central America, is 128 feet above the level of the Pacific ocean, and s distant from it only about ten miles.

A stage was recently struck by lightning, about 17 miles west of Chicago, Ill. The driver and one of the horses were killed.

The locomotive "Henry Ruggles," manufactured by Morris, of Philadelphia, lately ran eight miles in eight minutes, on the Long Island railroad.

A razor-strop merchant says that wine vinegar may be very much sharpened by being stirred about with one of his strops.

The Mount Savage Iron Company, of Maryland, have contracted to furnish 2,500 tons of railway iron for the Fall River Railroad.

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"Our Pledge is forever to banish the Bowl."

BY MRS. R. S. NICHOLS.

AIR—*Star Spangled Banner.*

Oh, dark was the home where the wine-cup was drained,
And wild were the tones of the man weak and weary,
That burst from those lips, which his orgies had stained,
When passing that threshold, deserted and dreary.
For once round his hearth
Rang out gladness and mirth,
But children and wife he had laid in the earth,
For he bowed to the demon that dwells in the bowl,
And with limbs strong and free hugged the chains to his [soul.

Oh, freedom's fair land bore the curse in her breast,
That drained the sweet founts of the spirit's devotion,
And lured her bold sons from their harbours of rest,
To launch in the storms of sin's billowy ocean.
With helm in the wave,
Is there hand that can save
Their souls from a dark and unhallowed grave?
Was it laughter that rose from the fiend in the bowl,
Where was mingled the curse that o'ermastered the soul?

But our Order arose, brightest Star of Reform,
Her Sons hailed the advent with shouting of gladness,
Her pale lustrous beams shed a light through the storm,
And it lit up the souls, that were drooping in sadness.
With hearts knit in one
They the work have begun
That will gladden the earth ere its mission is done,
For their pledge is forever to bannish the bowl,
They whose limbs are so free, spurn at chains for the soul.

Then press to the ranks, Sons of Freedom and Toil!
Bright eyes and sweet voices are softly entreating
For you, who should stand as the lords of the soil,
Where the dust of our fathers in honour is sleeping;
Where red wine has flowed,
There the strong heart has bow'd,
And faith there is broken to man and to God;
For our pledge is forever to banish the bowl!
We whose limbs are so free, spurn at chains for the soul!

"Boast not of To-morrow."

Boast not of to-morrow; remember, to-day
Is the time for poor mortals to love and obey;
To-morrow the sun may illumine the dew,
But its warmth and its light bring no comfort to you.

Boast not of to-morrow; the leaf on the bough
Is a thing not more tender and fragile than thou;
Every breath that you draw, and each moment that flies,
Are mercies direct from the throne in the skies.

Boast not of to-morrow, the sun may go down
On a king with his sceptre and cohorts and crown;
But the light of the morning may find him alone,
A monarch bereft of his subjects and throne.

Boast not of to-morrow; to-day you have health,
The smiles of affection, and friendship, and wealth;
But the wave of to-morrow may bear them away
From a heart left in sadness to weep and to pray.

Boast not of to-morrow; though poor you may be,
To-day has its smiles and its comforts for thee:
Then sigh not for riches; too often they bring
With their sweets and their pleasures a poison and sting.

Boast not of to-morrow; remember, to-day
Is the time for weak mortals to love and obey;
To-morrow the sun may illumine the dew,
But its light and its warmth bring no comfort to you.

A HINT IMPROVED.—The editor of a widely circulating paper, being asked how and why he was led to the habit of filling his sheet with short, racy articles, replied that his object was to secure *readers*, and that he had profited very essentially from the hint of a slave, who said he could, without fatigue, hoe an acre of corn in a day, *if only planted in short rows!*

Mr. S. A. FORD, of Newark, N. Y., is entitled to our thanks for his promptness in remitting money, (12½ cts.)---the 10 cents postage we make no account of,---and for his timely hints concerning certain points of management. We shall improve; and we expect that when he sees this, he will send another sixpense.

A LUCKY NEWSPAPER PUBLISHER.—A puplisher in France says he cannot receive any more subscriptions for his paper. He now sends out 20,000, and he cannot mail any more. He promises, however, that should any vacancies occur, he will supply those who first place their names on a list prepared for the purpose! This is quite encouraging.

FRENCH IRON-WORK.--The French goverument, in consequence of the increasing demand for iron for railroads and iron vessels, is contemplating measures for facilitating its importation. The Pittsburg Ærial suggests the expediency of having all the French war steamers built at Pittsburg by contract.

DISTILLERIES.---It is stated that the present number of distilleries in the United States, is 16,500: the number of gallons of liquor distilled annually is 41,502,707: sufficient to supply 600,000 people with one glass each per hour, and keep them drunk enough to be cruel, noisy and dangerous.

HAIRY CHINS.—The Emperor Andrian wore his beard long to conceal the warts on his face. It is more than suspected that many of our modern dandies cultivate long beards from similar motives.

The state of Massachusetts has received $60,000 as its share of the proceeds of the Western Railroad for the year past. A fair income.

Curious Arts.

TO MAKE A GOLD COLOURED VARNISH FOR TIN. To half a pint of alcohol, in a flask, add one ounce of gum-shellac, half an ounce of turmeric, and one fourth of an ounce of *red saunders:* set the flask in a warm place, frequently shaking it, for twelve hours or more; then filter or strain off the liquor, which may be occasionally diluted with alcohol.—If a color is required resembling dutch gold, or copper, a large proportion of the red saunders may be used. When this varnish is used, it must be applied to the work freely and flowing, and must not be brushed or rubbed while it is drying. One or more coats of this varnish (or laquer as it is sometimes called may be laid on the work, as the color is required to be deeper or lighter. To make a rose colored varnish, proceed as above directed, only substitue one fourth of an ounce of the best lake, finely ground, in the place of tumeric. A transparent blue varnish may also be made by means of prussian blue; and purple or green, by adding a little blue to the gold, or rose colored varnishes.—These laquers are frequently employed for washing silver bronzed ornaments, to give them the appearance of gold or copper.

TO WASH IRON OR STEEL WITH COPPER.—Dissolve sulphate of copper in water, in the proportion of one to three; wash iron or steel with it, and it will instantly be covered with reduced copper. This is best performed by applying the solution with a brush, which must be followed directly with a sponge of clear water. In this manner any letters or figures may be drawn with a camel-hair pencil or a pen, and if it be on polished steel, the letters or flowers will assume the brilliancy of the steel, and appear like highly polished copper. It may sometimes be requisite to cleanse the metal by washing it with diluted muriatic acid, that the copper may adhere more readily. If the steel thus ornamented be held over a charcoal fire, the copper figures become blue first; and when the steel becomes blue, the copper takes a gold colour, but is restored again by diluted muriatic acid.

Interesting Experiments.

TO PRODUCE FLAME OF VARIOUS COLOURS.—This may be effected by mixing certain substances with burning alcohol, or by applying them with the point of a penknife, to the wick of a burning lamp or candle. Thus a beautiful rose or carmine coloured flame may be produced by muriate of strontia: this is prepared by dissolving carbonate of strontia in muriatic acid, and evaporating it to dryness. The preparation for an orange colour, is muriate of lime, (a solution of marble is muriatic acid, evaporated to crystalization,) which should be exposed to a moderate heat till it is deprived of its water of crystalization and falls to powder. A fine green tinge is produced by acetate of copper, or boracic acid, which is procured by adding sulphuric acid to a solution of borate of soda (in hot water) till it has a sensibly acid taste; as it cools, the boracic acid is deposited in crystals on the sides of the vessel. Camphor gives to flame a blue colour, and nitrate of strontia, (prepared the same as the muriate) a purple. A brilliant yellow may also be produced by muriate of soda. Any of these preparations being reduced to powder, may be ignited with three or four times their weight of alcohol, which should be previously warmed; and if the vessel that contains it be kept heated also, the combustion will be more brilliant.

PRECIPITATION.—Set five glasses on the table, and nearly fill one of them with a solution of sulphate of iron; and another with a solution of sulphate of copper; a third with a solution of nitrate of bismuth; pour into the fourth a solution of nitro murate of cobalt, and into the fifth a solution of the acetate of lead, or sulphate of zinc. These liquid solutions may be diluted so as to be colorless. Then pour into each glass a few drops of a colourless solution of prussiate of potass. The contents of the first glass will be instantly changed to a full blue colour; those of the second to a reddish brown; those of the third to a yellow; the fourth to a green; and the fifth to a white. Thus five distinct colours will be given, by the addition of one colourless solution.

TO KINDLE A FIRE UNDER WATER.—Put into a deep wine-glass, that is small at the bottom, three or four bits of phosphorus, about the size of flax-seeds, and two or three times the quantity of chlorate of potass, in grains or crystals, and fill the glass nearly full of water. Then place the end of a tobacco-pipe stem directly on, or over the chlorate and phosphorus, and pour nearly a tea-spoonful of sulphuric acid into the bowl of the pipe, that it may fall directly on the phosphorus; a violent action will ensue, and the phosphorus will burn vividly, with a very curious light under water.

ARTIFICIAL ICE-MAKING.—The Morning News speaks of an invention calculated to produce ice by depriving water of its caloric. The description is not given because the invention has not yet been patented. We shall not dispute the point that if water is deprived of its caloric, it will be frozen and become ice; but having considerable experience on that subject, we venture to predict that the inventor will find it more difficult to produce ice in any considerable quantity in warm weather, than to demonstrate the practibility of it in theory. We have produced ice in hot weather, and that readily in small quantities, by simply removing the atmospheric pressure; but subsequently ascertained that similar results could not be produced when the process was applied to a larger quantity.

FACTORY GIRLS.---It is stated in the Springfield Democrat, that during one week in August, Miss Louiza Borden wove at the mills in Colerain, 2,142 yards of cloth, and received for the same $6 50.---Misses Susan Stickney and Charlotte Newcomb, wove in the same time, 2,008 yards each, for which their received $6 each: two others wove 1,974 yards each, making in all 10,106 yards of cloth woven by five girls in one week; and this is spoken of as an ordinary, rather than an extraordinary performance.

Railroad Intelligence.

It is a fact well known, that there is no branch of enterprise so much in vogue at the present time, as the projection and construction of railroads, notwithstanding that the stock in many of them is below par, and some have proved ruinous to the original projectors. As a general thing, however, capital invested in railroad stock, pays better than most other property of equal permanency. The rage for railroads in several parts of Europe, and especially in England, is greater than in this country. £92,-921,779, equal to $446,024,500, have already been invested in the various railroads already in operation or nearly completed in England; and Parliament, during its recent session, sanctioned the construction of 2500 miles of new railway, estimated to cost £38,488,000,---or about $155,204,000. As a further illustration of the readiness with which railroad stock is taken up in England, we may state that the stock of an unpromising railroad from Toronto, U. C., to Port Sarina, on Lake Huron, amounting to $5,700,000, was immediately subscribed for in London, and $4,000,000 of the money was put down. In this country there have been a large number of new railroads projected within the year past, many of which are now in progress. The Legislature of New York, at its last session, sanctioned new companies, adding $12,000,000 to the capital stock of railroad companies previously chartered. The reports of the business on the principal railroads, are in general highly encouraging. The nett earnings of the Boston and Providence railroad for the last year was $172,590; and after paying a dividend of three and a half per cent. in July, there remained a balance to credit of incomeof $72,402. The receipts of the Norwich and Worcester railroad for the month of June last, were $19,728, being $3,236 more than that of the corresponding month last year. The Housatonic railroad company, which it will be remembered, have been heretofore much embarrassed, have now surmounted all difficulties, and have obtained means to place a substantial T rail on the track. The Long Island road has been doing a fair business; the number of passengers carried on this road during the first and second weeks of August, was upwards of 12,000. The receipts on the Philadelphia and Reading road, for the week ending August 9th, was $29,317. The Eastern railroad---Boston to Portland---has become much more valuable than was at first anticipated. The increase of business on this road for the last five years, is shown by the following statement, which was presented at a recent meeting of the directors:---

	Receipts.	*Expenses.*	*Miles run.*
In 1840	$193,367 57	$115,433 10	112,047
" 1841	299,574 13	179,958 93	168,527
" 1842	269,168 72	144,039 71	184,127
" 1843	274,641 64	129,640 63	184,156
" 1844	343,899 60	131,318 86	204,962

Among the many new railroads which have recently been projected, and are already in progress, or appear likely to be carried through, are one from New-York to Lake Erie; the stock of which ($3,000,000) has been principally taken; one from Portland, Me., to Montreal, to which $1,000,000 have been already subscribed. A railroad from Portland to Augusta, with a branch to Bath is expected to be soon put under contract. The Boston and Fitchburg railroad is to be continued through Keene, N. H. Lebanon and White River to Burlington, Vt. Another road from Concord, N. H. is to intersect with this at Lebanon. The stock of this road has been nearly or quite all taken up. Another road from Concord, N. H. to Montreal, by way of Haverhill, is projected, and a large amount of subscriptions to the stock thereof has been offered. The Connecticut River Railroad from Springfield to Northampton, Mass., is nearly ready for the cars. A railroad from Worcester, Mass. to Nashua, N. H. is in progress, and will form an extension of the Norwich and Worcester road. A railroad from Concord, N. H. to Portsmouth, is expected to go through without delay. Railroads have also been projected, and movements are being made for putting them forward, from Baltimore to the Ohio River; from Georgia to New Orleans;—New-York to Albany, on the margin of the river; from Burlington to Ogdensburg; Oswego to Syracuse (about 150,000 of this stock has been taken.) Also a railroad from Hartford, Ct., to New York, via. Dansbury;—Springfield, Ill. to Alton. There are many other roads projected, of the progress or prospects of which we have no particular intelligence; but we have mentioned enough to show that the railroad builders have a fair prospect of business for one year at least. We shall have occasion to speak of various improved facilities in the construction of railroads in future numbers.

P. S. Since the above was written, we have learned that $1,800,000 have already been subscribed to the stock of the New York and Erie railroad.

THE MORNING ARIAL of Pittsburg, Pa. is without exception, the most elegant and excellent daily that we have seen from west of the Hudson. We would recommend to all who want a daily paper to cheer and amuse,—one that will regularly appear with a beautiful face and cheerful countenance,—to subscribe for it without delay. V. B. Palmer, Esq. 168 Nassau st. is agent for the Ariel in this city. Terms only $5 per annum.

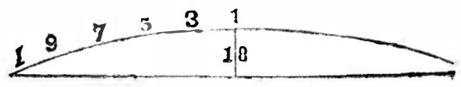
EFFECT OF RAILROADS.---It is stated that the value of real estate in Boston, has increased $20,-000,000 within the last three years, which is about equal to the cost of all the railroads radiating from that city, and which have been a principal cause of this advance. If the increase of the value of property in the vicinity of these railroads in other towns was ascertained, it would probably be found to be double the entire cost of building the roads.

PETRIFACTION.—We mentioned in a late number, that a ready method for petrifying bodies had been discovered. This is effected by a liquid compound; and it is now said that a bunch of flowers or any other vegetable substance may be changed to stone in a few hours, by the same process. A farmer may in this way preserve his pork more effectually than by salting it.

Segment Rule.

A rule for finding the breadth of a segment, at any given point or distance from the centre. Divide the distance from the middle to the end, into any number of such even parts, as will also divide the distance from the centre to the given point, without a remainder. Mark the centre 1; mark the first point of distance 3; the second point 5, &c., adding two at each point. Add together the numbers from the end to the given point; and multiply this sum by the given breadth of the segment;—divide this product by the sum of all the numbers;—the quotient is the answer.

EXAMPLE.—A segment is fifty feet long, and 10 inches wide at the centre. What is its breadth, ten feet from the end?



9 and 7 are 16, which multiplied by 18 is 288; this divided by 25, (the sum of all the numbers) is 11, 52 the answer.

American Mechanics.

We have heretofore alluded to the taste and skill of American Mechanics, as displayed in the art of building, &c., We take this occasion to say something more in connection with that subject, and would remark that the enterprise and skill of American Mechanics have become justly celebrated throughout the world; and it is a fact, of which every American feels a sensation of national pride, that not only the far-famed eastern nations, but even those which have heretofore led the world in the arts and sciences, are now looking up to the Americans for models, patterns and examples. Yet there is something exceedingly mysterious and unaccounted for with regard to American Mechanics as a class; and that is, that they evince so much indifference and apathy with regard to a proportionate share of influence of the American press. Our cities abound with newspapers,—weeklies, semi-weeklies and dailies,—which are devoted almost exclusively to the commercial and mercantile interest. Each of the learned professions, have their peculiar advocates and organs: the agricultural interests also, occupies a fair proportion, many ably conducted papers being devoted exclusively to the interests of the farmer: but where are the Mechanic's Advocates and Journals? Where are the papers, devoted to such intelligence as is most interesting to mechanics as a class, and in which their interests are prompted and their rights defended? It is a fact, that the operating mechanics of America,—the class on which, more than any other, the honour and prosperity of our country mainly depend,—are negligent in providing and supporting such papers; this cannot be the case through any want of liberality, certainly; but most probably on account of their habits of industry,—close attention to business,—which prevents their devoting that attention which they are ever eady to admit that the subject deserves.

TRIUMPH OF THE MECHANIC ARTS.---The most splendid steamer ever constructed in this or in any country, was completed and commenced her regular trips last week. She is called the Oregon, and is to run on the Independent Line between New York and Providence. Her length is 330 feet; breadth, 35 feet, and tonage 1,100. The dining cabin is 125 feet long, and will accommodate 200 persons at the table. In her main cabins are 200 berths, richly double-curtained, and the floors are richly carpeted. The ladies' cabin on deck is splendidly furnished: the carpet alone cost nearly $1,500. The saloon on the promenade deck contains sixty state-rooms, furnished with splendid French bedsteads, richly curtained and canopied. She is propelled by an engine of 1000 horse-powers, and will run twenty miles an hour. The cost of the Oregon is said to be $130,000, including furniture, which cost $25,000. If there is any thing objectionable, it is the excessive profusion of expensive elegance which pervades every part, above and below, from stem to stern. She is commanded by Captain St. John, formerly of the Knickerbocker, and all friends of enterprise must wish her success.

BEAUTIES OF A FLOWER GARDEN.—Who is there so totally void of taste, as to have never minutely examined, or having examined to have not admired the brilliancy, and peculiarly appropriate arrangement of the various colours of vareigated flowers. The little flower known as the elegant estoltzia, and some varieties of the clove pink, when attentively observed, must excite a sensation of wonder and admiration, if not of adoration towards the Divine Author. One of the best anecdotes we have ever heard, has a relation to this subject. A sprightly boy was in a flower garden, comparing and admiring the various colours, when a pious friend, quaker, thus reprovingly accosted him, "Well little boy, thee seems to be greatly taken up with the gay flowers." "True" answered the boy, "I do love to look at them: but I suppose that if the Creator had been a quaker we never should have such pretty flowers as those to look at."

RELATIVE VALUE OF NEWSPAPERS.---It is a custom of many of the stupid and foolish classes, to judge of the value of a paper by its size only. A cotemporary compares this practice to that of an uncle of his, who, being a justice of the peace, decided the merits of the causes brought before him by weighing the documents of each party in a pair of scales, and deciding by their weight, without any further examination.

TROUBLESOME CONSCIENCE.—A very extensive establishment for the manufacture of spurious gold and silver coins, a few miles from Lexington, Ky., has been recently broken up, and its proprietors arrested in consequence of the dying confession of one of the circulators of the counterfeits.

TERRIFIC PESTILENCE.—Recent news from the East Indies reports that at Panjaub, the inhabitants are swept off by thousands by the cholera. At Lahore the deaths were estimated at from 500 to 900 per day. Nearly 30,000 victims had fallen.

The Prophetic Scriptures.

We are assured by the Apostles, that all Scripture is given by inspiration of God; and that holy men of old, (the prophetic writers,) spake as they were moved by the Holy Ghost. And we find by a careful perusal of the prophetic writings, abundant manifestations of infinite wisdom, not only in the *matter* of the prophecies, but in the *arrangemen.* thereof: for it is an interesting fact,—though one that has been generally overlooked,—that the most brilliant and wonderful promises, and predictions of future events, are so arranged that no person can understand them, by an ordinary, indifferent or casual reading; nor without a close and attentive application: some degree of familiarity with the prophetic writings, is also requisite, to enable the student, while reading one passage or portion thereof, to remember other portions which may synchronize therewith, and aid in elucidating the true sense and signification.

The prophetic scriptures furnish ample evidence within themselves, of their divine origin, independently of any historial intelligence of the fulfillment of the predictions thereof: and should the most confirmed infidel apply himself to the study of the sacred writings as closely as some who love the truth, he would see that no human beings could have composed or invented them, any more than they could have invented the laws of nature.

It is the practice of some, to endeavour to find out the sense of a passage of prophecy, by closely examining other readings which immediately precede or follow the prophetic passage; but by this method, they would in many instances be as likely to arrive at the conclusion that there is no sense at all in the text, as to find the true meaning. In most instances, the prophetic passages—those especially which contain the most important and precious promises,—are placed in the midst of other readings, which have no connectionn with the subject whatever. For example, the 9th verse of the 9th chapter Zechariah, contains the only passage in the chapter, which refers to the first advent of Christ. The latter clause of Hosea 10: 8, evidently refers to the time of the second advent, although the preceeding and succeeding verses, refer to subjects apparently foreign to that event. The 1st. and 2d verses of the 9th chapter of Isaiah, contain a prophesy which was quoted by the evangelist, (Matt. 4: 16) as referring to the residence of Jesus; yet this prophecy is placed in the midst of a very different subject, and would hardly have been suspected of containing a prediction, until manifested by its fulfillment. The 6th and 7th verses of the same chapter, contain some of the most brilliant and glorious prophecies that are found in the sacred Scriptures, yet having no apparent connection in the sense thereof, with other parts of the chapter. Most of the various promises, which were so perfectly and literally fulfilled at the time of the crucifixion, are found in various parts of the sacred writings, and generally disconnected in the sense thereof, from the readings in which they are located. Thus it is evident that the divine Author did not intend that these jewels of the Scriptures, should be seen by the careless and indifferent reader. Thus it is and thus it should be to fulfil the prophesies themselves; but we may say with confidence to all sincere enquirers, that they need not be apprehensive of any difficulty in understanding the sublime and excellent prophesies, if they but apply themselves to reading of them with dilligence, and with fervent prayer for the divine light of the Holy Spirit, which is able to guide them into all truth. On this subject, however, it may be recommended that those whose time and opportunity for reading are limited, should mark with a pencil, such passages as may appear to be most interesting, or on which they may desire more light; and by the more frequent reading of the passages thus noted, thy will soon be enabled to associate and connect the sense of various prophecies, in such a manner that one will illuminate another, and the truth and beauty of the whole will become more and more apparent; although it is plain and admitted by all the evangelists who have quoted prophetic Scripture, that the most important and pointed prophecies, are distributed as it were promiscuosuly, amongst the prophetic and historical Scriptures, and with which they have not in general, the least apparent connection. But as a whole, the Scriptures of the Old and New Testaments, are complete and perfect; being precisely what the divine Author intended they should be, and are able to make wise unto salvation, those who search dilibently and prayerfully for the light thereof.

It is too frequently asserted by those who are not very fond of studying the sacred Scriptures, that no person can properly understand them, unless he is acquainted with the language in which the Scriptures were originally written; but in this they evidently overlook the fact, that the same divine Being who imspired and dictated the writers of the Scriptures, also by his providence, controlled the formatian of the English language in such a manner that our translation of the sacred writings, conveys the sense thereof in precisely the manner, and with the same degree of simplicity, that He designed and intended that it should do: and it is not by any means improbable, that the sense of many of the prophesies, are rendered even more plain and intelligible in our translation, than they were to the Jews in the original language. The doctrine that the divine Author has given the inspired writings in such a form as to render the common readers dependent on the ostensibly wise and learned for explanations thereof, does not comport with the tenor of the Scriptures themselves. It has been judiciously remarked that the only true expounder of the sacred Scriptures, is the Author thereof; and since it is known that He sometimes reveals knowledge to babes, which is hidden "from the wise and prudent," let no one despond, nor depend on the wisdom of the learned; but ask wisdom of God "who giveth to all men liberally and upbraideth not," and it shall be given him.

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Most numerous are the inventions lost to the world for ages, and many doubtless to this day, because the inventors, being poor, could not bring them out. To remedy this evil to some extent, the following plan is suggested.

RARE PROJECT.

G PECK & CO. having, and being offered, several new inventions, worthy to be tested and brought out, present to the public the following liberal offers.

One invention promises great usefulness to most cities, villages, and farmers; one, great aid to agriculture. One, greater safety and cheapness to rail-road conveyance; one a great saving of expense, time and toil in education, &c.

They require means to bring them into use. If many will furnish each a little the burden will be light—the success almost certain, and the advantage the greater; and this advantage the inventors will gladly share with the helpers. Incurring much expense, and risking much themselves, it cannot be presuming too much to trust that an intelligent public will see it to be liberal, and wise to risk a little and invest the small sum proposed on the terms here offered.

It is little any can lose if he were to get no return, while we must lose far more, even for advertising, if none accept our offers. But they will have some return, and may much gain. Let then each send us his name and $2, or 25 cents weekly for ten weeks, and secure the advantages of these inventions.

We add one other consideration. Had Fitch, who first applied steam to propel a boat, and was the real first inventor of steam boats, received a little aid, steam boats would have been in operation more than 50 years ago, and our country would have had the undisputed honor of the invention. But he exhausted his means—none would help—and though he knew it was worth millions, he died in poverty, and our country was the loser for a half century.

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A share or town right of a valuable patent—50 or 100 acres of good farming land; $2, $30, or $85 cash; a copy of the circular interest tables, or a useful Essay, to be had on easy terms.

The patent share will be sent to any one who sends us $2, or 25 cents weekly for ten weeks, which share will be worth $5 or more.

The town right will be his who procures 25 share subscribers and sends us the money. The 50 acres his who sends us the money for 150 subscribers within three months. The 100 acres his who sends us for 300 in four months. The $2 his who sends us the $2 each for 12 subscribers in 2 months. $30 his who sends for 160 in 3 months, $85 his who sends for 250 in 6 months. The interest tables or Essay shall be his who sends us immediately the names of each waggon, carriage, plough or harness maker, of each farmer who keeps bees or silk worms, of owners of furnaces or forges, of each physician, minister, teacher, miller, tanner and merchant of the village or town where he lives, twenty-five names or more; and also a share of the patent right if he sends 25 or more names and 25 cents cash within one month.

The patent share to each of those who pay $2 within 8 weeks from next September 1, or before, will embrace three inventions; to those who pay in the next 5 weeks, two inventions; and but one to others, and not this unless cash is received in 4 months, unless we choose. The essay or tables will also be his who pays before September 20th. What we desire is speedy work—hence these large premiums. Most important inventions will thus be secured, and a profitable share to each.

We also offer to any one who will send us $10, $30, $75 or $125, to give him 3, 9, 27 or 54 shares one-third in each of three inventions, or a town right of one, two or three of the patents, and a privilege to sell rights, at great profit; and he may commence at once. We can give good business of this kind now. If our project meets with the favor we expect we shall be able to give a great deal of business of this kind, and thus greatly promote enterprize and industry. We have the best machine to clean wheat of smut, garlic, &c.; price $75. Over 70 have been put in operation in one county in Pennsylvania. We have also the best cultivator for tilling corn and putting in wheat and rye, from $6 to $15. Also the neatest, handiest and swiftest straw cutter of its size, for $12. Office for orders at room 13, 25 Pine street, next to the Custom House.

The inventions will be of different values, and will be put into such number of shares as will make each share worth $5 or more. We will dispose of the rights, keep the accounts, and pay to share holders the dividends. We shall also from time to time, quarterly or oftener, send them a paper giving them a full account of the inventions, as far as it will be best to publish it. We shall send them the first in September. Let it announce that subscribers are already in to secure the whole project. It will not fail if no more subscribe than we already have. We can do a little, and each who helps will aid us to do more; thus none will lose, but if many help, the better will it be to each. One of the most promising inventions will be very costly to start. We want 10,000 subscribers for it: but it will be worth ten times the cost; and it is certain of success, it has been so far tested. The others are very excellent in promise.

The inventions are very important; the land good in this State or in Pennsylvania; the Tables useful, and the Essay on a subject of deep interest to all; and the periodical we shall occasionally send, free of charge, will be of general interest to farmers, mechanics, patentees, physicians, ministers, and owners of minerals, and to all.

It is thus the interest of all to push this project. Let then each improve this offer at once, and have the satisfaction of aiding to bring out great inventions that promise vast benefit to mankind, and good profit to the helpers, as well as timely aid to some worthy inventors, who are struggling with poverty, whom we greatly desire to aid. Now is the WORD! Now or never. If QUICKLY done, it will be DONE and WELL done, and a GOOD THING done.

It will be easy for two or more to unite, write their names in a letter, put in the money, and direct to G. Peck & Co., New York. The mail will bring it safe, or we will risk it, and pay the postage.

New York, August 1845. G. PECK & CO.

Editors who will notice this rare project and advertise it, will promote a great public good, and shall share liberally in the advantage they promote. For 13 insertions of the project in full, they shall receive 5 of the three right shares.

Besides the guarantee, which the expense we have already incurred for patents, models, machines, advertising, &c. to make these proposals, gives, to warrant confidence at least to the little extent we ask, we are favored with the following certificate, signed by Hon. R. H. Morris, late mayor and present post-master, and by Hon. F. A. Tallmadge, the present recorder of New York:—

"Messrs. G. Peck & Co. wishing the public to favor their business, this certifies, that, from our personal acquaintance we are assured that confidence in their proposals will not be misplaced.

ROBT. H. MORRIS,
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☞ All our travelling and city agents will have receipts to give, signed by us. Postmasters, Editors, and others, acting as local agents, in towns and villages where they are known, will give their own receipts, which will be duly acknowledged by G. Peck & Co.

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N.B.—M. Benedict would state to the public in general that he is no stranger in the city, having been established 22 years in business in the *B*owery. The repairing of watches, jewelry, and French parlor clocks, attended to with strict punctuality. au23

PATENT GALVANIC RINGS,

AND CRISTIE'S MAGNETIC FLUID.

THIS remarkable discovery has received the universal approbation of the medical profession of Great Britain, who have pronounced it among the most important of modern scientific inventions. The PATENT GALVANIC RINGS have been found to answer all the purposes for which the ordinary Galvanic Battery, or Electric and *M*agnetic machines are used, but without any of the injurious SHOCKS which always accompany the application by these instruments, and in many other respects are more *safe* and *certain* in accomplishing the desired object.

The Galvanic Rings have now been several months before the English public, and the universal reputation they have acquired is sufficient evidence of their extraordinary power in the prevention and cure of the diseases for which they are recommended. They have been used with perfect success in all cases of Rheumatism, acute or chronic, Gout, Tic Dolcreaux, Sick Headache, Indigestion, Paralysis, Stiff Joints, General Debility, Deficiency of Nervous Energy, Neuralgia, and all Nervous *D*isorders. The galvanic power which they possess is gradual and constant, and the beneficial effects they produce upon the system must be witnessed to be believed. The Galvanic Rings are in every way perfectly harmless, and are sold at prices to be within the reach of all desirous of testing their efficacy. *Dr. Christie* warns the American public from the beginning, to beware of *spurious imitations.* The only Agency in New York is at 134 FULTON STREET, a few doors from Broadway, and from the secret process by which the metals are prepared to be rendered sensitive and efficient, all imitations must be entirely devoid of any galvanic effect. CHRISTIE'S *M*AGNETIC FLUID, used in connection with the Rings, to accelerate and render effective the galvanic action, is only to be procured at the same place. s11

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THE unprecedented sale of the *Cummington Quinebaug SCYTHE STONES,* during two years, has fully established their claim to *SUPERIORITY OVER ALL OTHER STONES* now in use, and renders unnecessary any recommendation from the proprietors.

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AT the Tool Store, No. 60 Chatham street, corner of Chambers, at the sign of the Saw, Axe, and Plane, will be found good tools suitable, for the following Branches of trade.

Blacksmiths'	Engravers,	Hatters,	Shoemakers,
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H. R. assures his friends that he has no connection with any other store, and that at his store, State Prison Tools are NOT SOLD OR KEPT. sep 4

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AMERICAN INSTITUTE FAIR.

THE EIGHTEENTH GREAT FAIR OF THE AMERICAN INSTITUTE at NIBLO'S GARDEN, New-York.—The Fair will open on Monday, the 6th of October next, at 12 o'clock, M. The days for delivering articles at the Garden, THURSDAY, FRIDAY and SATURDAY previous. The National Convention of Farmers, Gardeners, and Silk Culturists, will be held on Thursday, 9th October. Delegates, without further notice, are invited from all parts of the Union. The Cattle Show will be held on the ground between 23d and 24th streets, 5th Avenue. Ploughing and Spading Matches, &c., as usual. Head Quarters for Managers, Committees, &c., secured in the Madison Cottage. Fine horses for draft, healthy fat cattle, and sheep for market, well matched and trained working cattle, and new and useful inventions, will command higher premiums than at any preceding Fair. An opening, anniversary, &c. Addresses will be delivered by the most eminent orators of our country. The people of this great Republic are invoked zealously to co-operate in carrying out this exhibition, which promises far to exceed anything that has gone before. au23

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